



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/925,080	08/08/2001	Ferruccio Frisina	S1022/8707	3073

23628 7590 07/14/2003

WOLF GREENFIELD & SACKS, PC
FEDERAL RESERVE PLAZA
600 ATLANTIC AVENUE
BOSTON, MA 02210-2211

EXAMINER

LUU, CHUONG A

ART UNIT PAPER NUMBER

2825

DATE MAILED: 07/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/925,080

Applicant(s)

FRISINA, FERRUCCIO

Examiner

Chuong A Luu

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-23, 25-27, 33-38 is/are rejected.
- 7) ☒ Claim(s) 24, 28-32 and 39-42 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Art Unit: 2825

DETAILED ACTION

Applicant's arguments with respect to claims 13-20 have been considered but are moot in view of the new ground(s) of rejection.

PRIOR ART REJECTIONS .

Statutory Basis

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The Rejections

Claims 13-23, 25-27 and 33-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noble, Jr. et al. (U.S. 6,225,165 B1) in view of Ajit (U.S. 5,719,411).

Noble, Jr. discloses a high density static memory cell with

(13); (25) a number of superimposed semiconductor layers of a first conductivity type and at least two columns (see Figures 11-12) of doped regions of a second conductivity type, said columns (see Figures 11-12) disposed in said number of superimposed semiconductor layers;

(19); (37) wherein said first conductivity type is N type and said second conductivity type is P type (see Figure 12);

(20); (38) wherein said first type of conductivity is the P type and said second type of conductivity is the N type (see Figure 12);

(22) wherein the number of superimposed semiconductor layers have a similar dopant concentration (see Figure 12);

(23) wherein the number of superimposed semiconductor layers have a similar thickness (see Figure 12);

(26) wherein each sub-region of each region is a doped semiconductor (see column 3, lines 50-60);

(17); (35) wherein, for one or more of the plurality of regions, the plurality of superimposed sub-regions are merged together (see column 3, line 67 through column 4, lines 1-8);

Noble, Jr. teaches everything above except for wherein, for each column of the at least two columns, the column is deeper than each column of the at least two columns that is farther from said high voltage semiconductor device than the column; wherein one or more doped regions of the at least two columns has a dopant concentration. However, Ajit discloses a MOS-gate controlled thyristor structure with **(13)**.... wherein, for each column of the at least two columns, the column is deeper than each column of the at least two columns that is farther from said high voltage semiconductor device than the column (see Figures 1 and 2); **(14); (34)** wherein said high voltage semiconductor device is a power MOSFET (see column 4, lines 38-48);

(15) wherein said number of superimposed semiconductor layers is superimposed on a semiconductor substrate (see Figure 11);

(16) wherein each one of said at least two columns has a depth decreasing by shifting from said high voltage semiconductor device towards an outside of the integrated edge structure (see Figure 11);

(18) wherein the doped regions of each of said at least two columns are superimposed but not merged to each other (see Figure 11);

(21); (27) wherein one or more doped regions of the at least two columns has a dopant concentration of approximately 1×10^{15} atoms/cm² or less (see column 4, lines 52-59);

(33) wherein the semiconductor device is a high voltage semiconductor device (see column 7, lines 28-44);

(36) wherein, for one or more of the plurality of regions, the plurality of superimposed sub-regions are not merged together (see Figure 11). It would have been obvious to one having ordinary skill in the art at the time of the invention was made to combine the above teachings of Noble, Jr. and Ajit to fabricate a semiconductor device to exceed its performance criteria.

Allowable Subject Matter

Claims 24, 28-32, 39-42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuong A Luu whose telephone number is (703)305-0129. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (703)308-1323. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7724 for After Final communications.

Application/Control Number: 09/925,080

Page 6

Art Unit: 2825

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

C. Evershart
CARIDAD EVERHART
PRIMARY EXAMINER

CAL
June 30, 2003